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# Organic compounds of natural origin as hypopigmentation dermocosmetic active substances – *in vitro* and *in vivo* study

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## INTRODUCTION & AIM

There is a growing interest in the investigation of plant extract rich in bioactive compounds which can be used in dermocosmetic industry in the prevention and/or treatment of skin changes and diseases caused by oxidative stress and photodamages [1-3].

Alpha-hydroxy acids (AHAs) and polyphenols (PPs) are organic compounds of natural origin frequently used as good and safe hypopigmentation substances in dermocosmetic products for lightening of dark spots appearing on the skin due to oxidative stress.

The aim of our study was *in vitro* analysis of content of AHAs and PPs and *in vivo* investigation of hypopigmentation potential of dermocosmetic cream with extract of wild apple fruit (*Mali sylvestris fructus,* (L.) Mill., Rosaceae), as a source of these organic compounds.

## METHOD

Cream was made with 6% of extract of wild apple fruit (obtained by ultrasonic extraction and ethanol as solvent), as a source of AHAs and PPs, and stabilized by alkyl-polyglucoside emulsifier.

Content of AHAs and PPs into cream was investigated using HPLC analysis.

*In vivo* hypopigmentation potential was investigated employing the biophysical methods on the skin of healthy volunteers after 7 days of cream application, after artificially induced skin hyperpigmentation using dihydroxyacetone (by measuring melanin index-MI and erythema index-EI).

## RESULTS & DISCUSSION

Content of identified AHAs was 252mg/100g of cream (the most common were malic (19.75mg/100g) and lactic acid (21.07mg/100g)), and PPs 1.07mg/100g (phloridzin (0.47mg/100g) and chlorogenic acid (0.41mg/100g).

*In vivo* investigation revealed good hypopigmentation potential of cream. Application of cream with AHAs and PPs, as active exfoliation agents, induced significant decrease of MI (-20,25±41,61) and decrease of EI (-45,25±23,54) (Fig.1)

Formulated dermocosmetic cream demonstrated good lightening and anti-irritating effects on skin, probably due to the synergistic effects between identified AHAs and PPs.

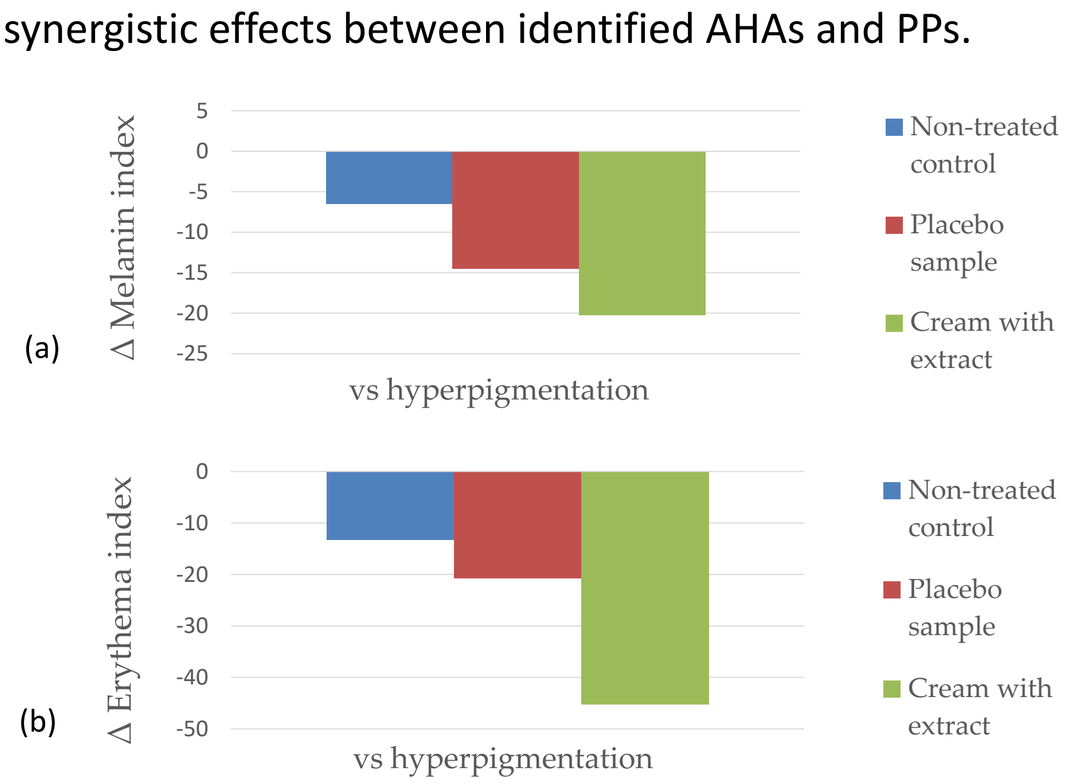


**Figure 1.** *In vivo* determined absolute changes (Δ) of investigated parameters measured after 7 days of application of cream with extract and both controls compared to same parameters measured after hyperpigmentation: (**a**) Δ MI; (**b**) Δ EI

## CONCLUSION

Cream with organic compounds of natural origin, as active hypopigmentation substances, might be suitable for possible usage as dermocosmetic product for lightening of skin hyperpigmentation.

## FUTURE WORK / REFERENCES

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